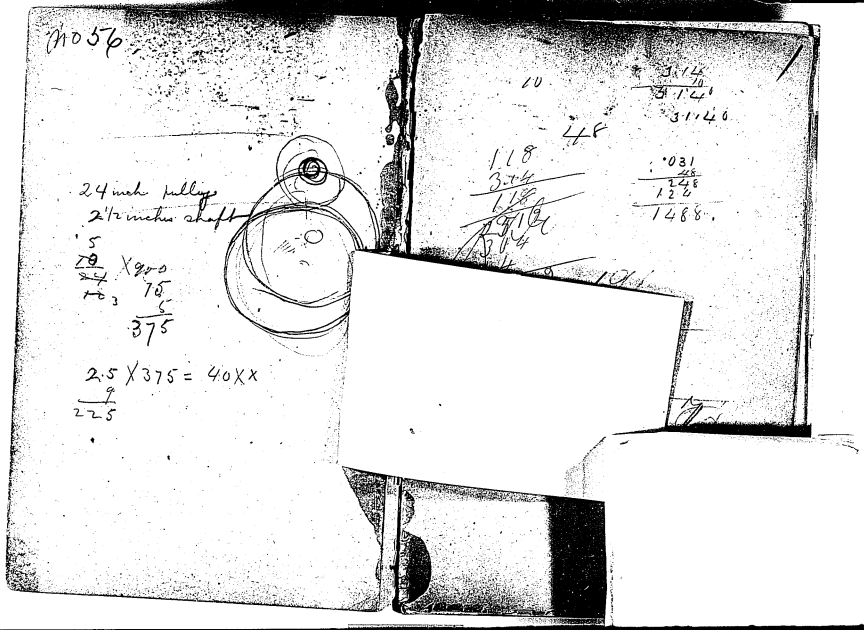
Menlo Park Notebook #56 [N-79-07-25]

This notebook covers the period July 1879-August 1880. The first part of the book contains entries by Edison, Charles Batchelor, John Kruesi, and Francis Upton and relates primarily to electric lighting. Included are drawings of lamp regulators and clamps; calculations and drawings of generators; notes, tables, and drawings of conductors; and calculations about electric power distribution. There is also a memorandum by Edison on the cost of telephone parts. The second part of the book contains memoranda by Kruesi concerning material to be ordered for the extension of the machine shop and material required for generators. There are also notes on the Porter steam engine and a map of Menlo Park containing a plan for the placement of electric lights. The book contains 284 numbered pages.

Blank pages not filmed: 32-33, 68-69, 72-83, 86-105, 132-135, 144-153, 162-165, 190-191, 200-201, 232-235, 252-253, 260-263, 266-279.

Missing page numbers: 118-120.


1056
24 inch pulley
2½ inch shaft
2.5 X 375 = 40XX
3.14
3.14
31.40
.031
248
124
1488.

M056

24 inch pulley
2 1/2 inches shaft

LIBRARY OF THE

BOARD OF PATENT CONTROL,

120 BROADWAY, NEW YORK.

From Library
44 Broadway, NY
May 1, 1896

10

48

118
3.14
118
472
354
354
370.52

3.14
10
31.40
31.40

.031
48
248
124
1488.

955

1246

6) 1541.05 = 172

128

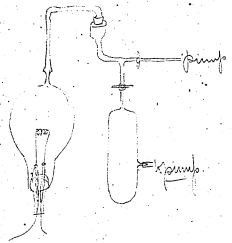
51

1

2

July 23rd 1915

Distillation



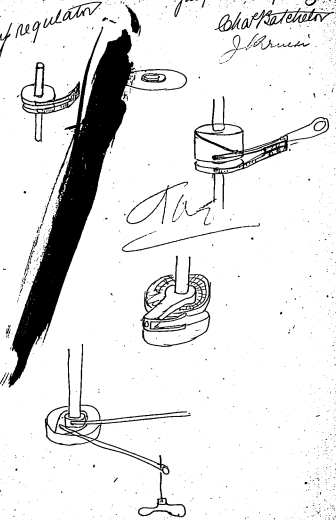
Electric light

Lamp regulator

July 31st 1879

Chas Batchelder

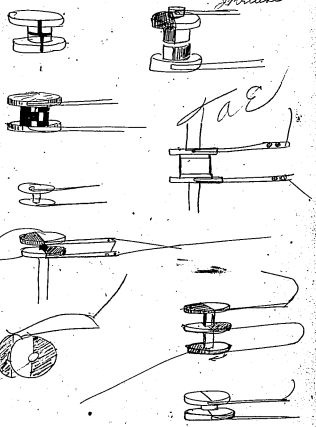
J. Bruce

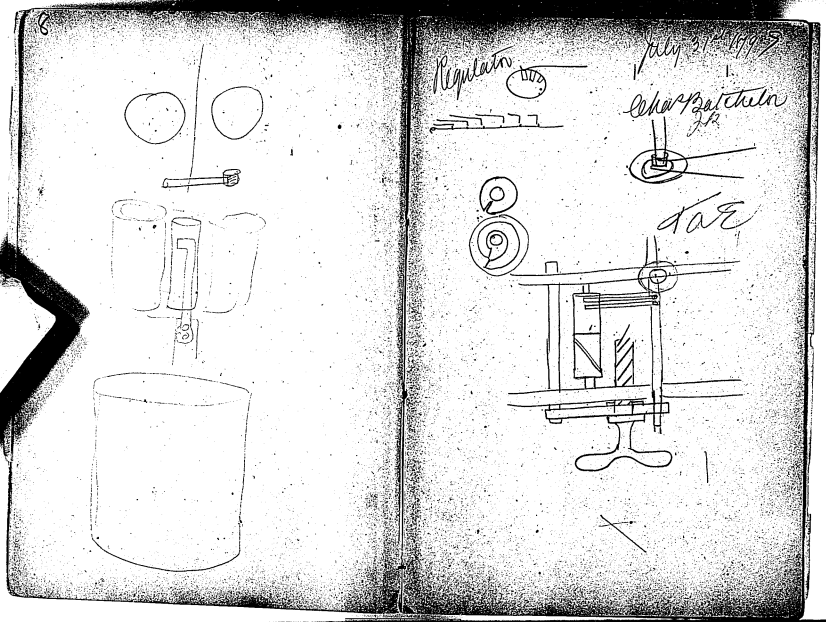


Electric light

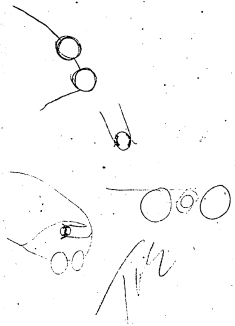
July 31st 1879

Thos Watchen




8
Regulator
July 3rd 1895
Charging Batteries
Jr.
Fig E

10

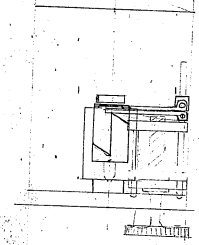


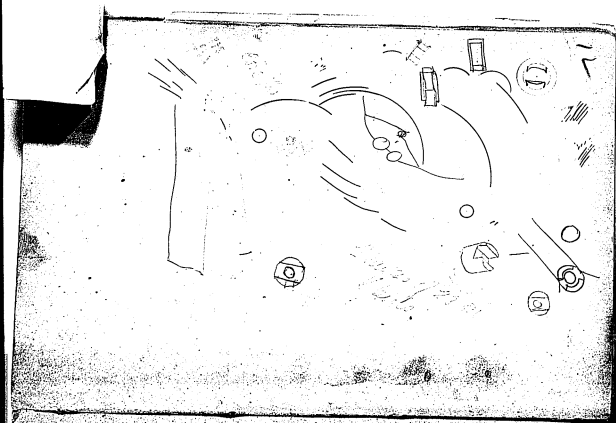
Ed Light
Requests

July 31/79

Charles Satchell
JK

KAE

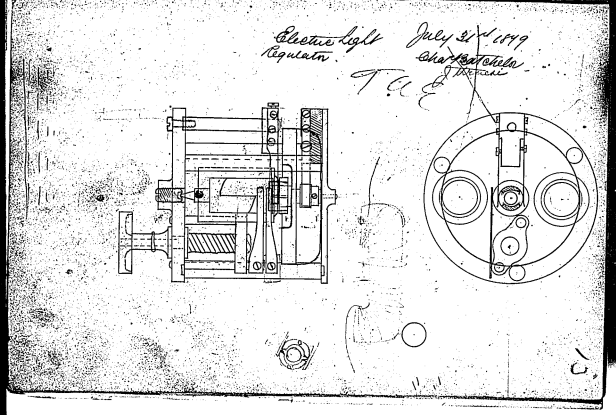




Electric light Regulator.

July 21st 1879

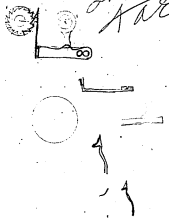
Sheet No 1 of 2 Sheets



E. Light Regulator

July 31st 1899. JJ-

Charging Latches



16

Electric light

Sept 24th 1879

Chas Batchelor

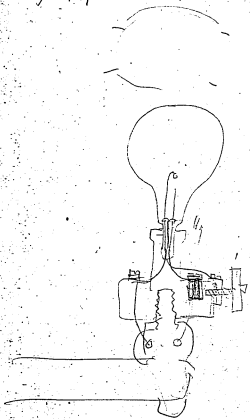
Make 1 brass spool.

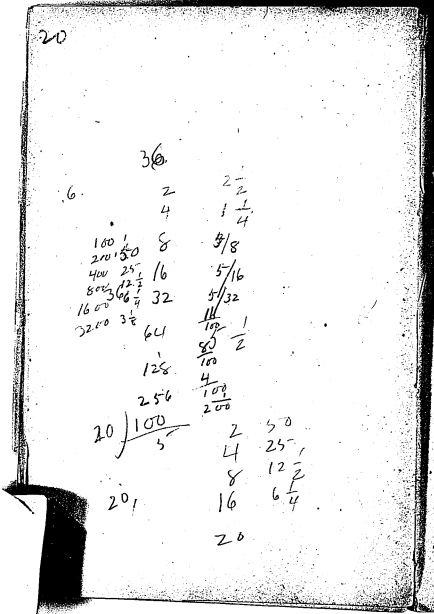
Heads diam $\frac{7}{10}$"
Body diam — $\frac{1}{8}$"
Body length $\frac{1}{4}$"
Heads length $\frac{3}{64}$"
Hole through $\frac{1}{16}$"
2 Holes for wire one at each end one close to barrel & other as high up as possible .007

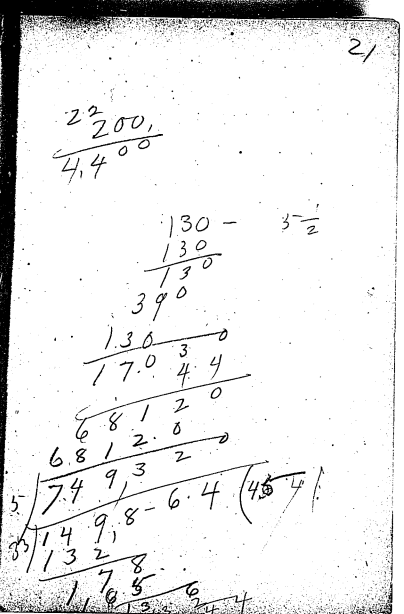
Make 6 Iron ones —
Make 6 Aluminum ones —

1/78
39

2/39
1.91







22

8.

3:c 10 kiwa, 1 bunu

3 3/4 - 29,000,000

150,000.

675
4000
2,700,000 60.
75. 60.
4000 45.

13,000,600

25

3000,
12,000

100,

1-2

60 120
20 - 90 =

27 - 120
70
3
210

60,
20,

24

Twist the wires of coils
resistance same .60
make armatures 1½ ins
longer in diameter

Gas Faradic machine
No 4

Cost 31st 1879

J Hewitt

2

800

$\frac{5334 \times 22}{3150 \times 2.1} = W$

2.1
3150
6300
6615.0

5334
22
10668
10668
117348
6615
51190
46305
48850

6615 | 117348 | 17.7

17.7 inches to carry
22 Horse power

24

1000

110

$$\frac{5334 \times X}{2500 \times 1.2} = 5$$

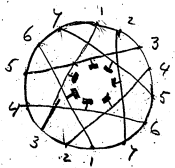
$$X = \frac{2500 \times 1.2 \times 5}{5334}$$

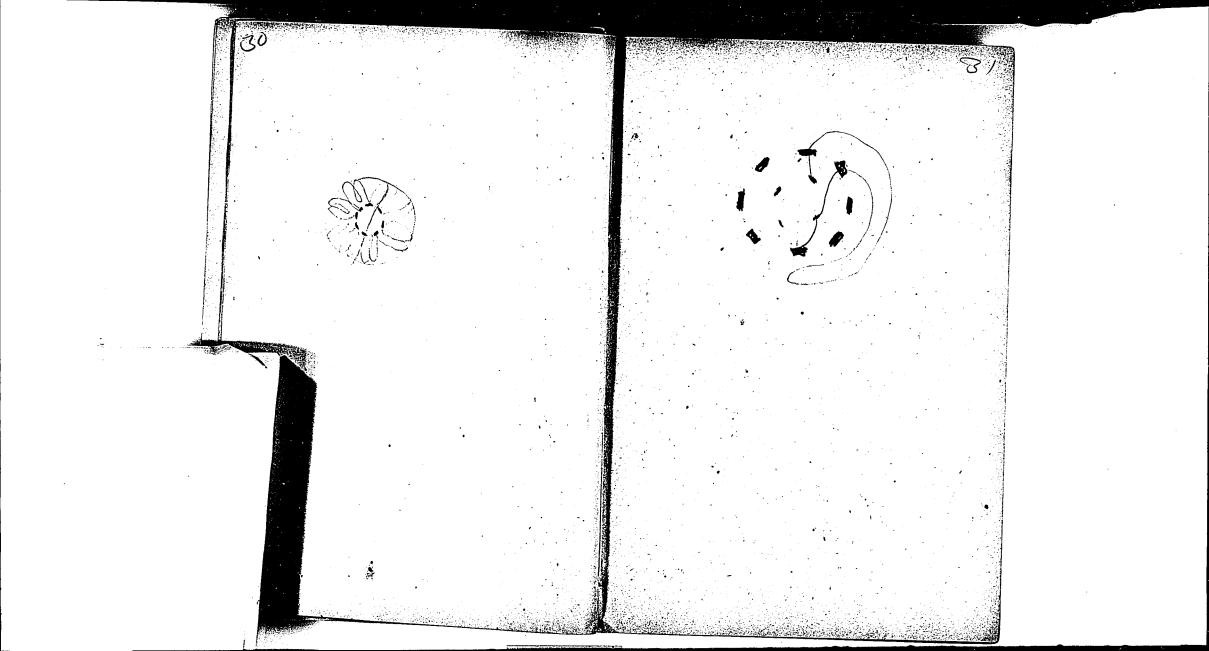
2500
6
5334 | 15000 | 2.58
10668
43320

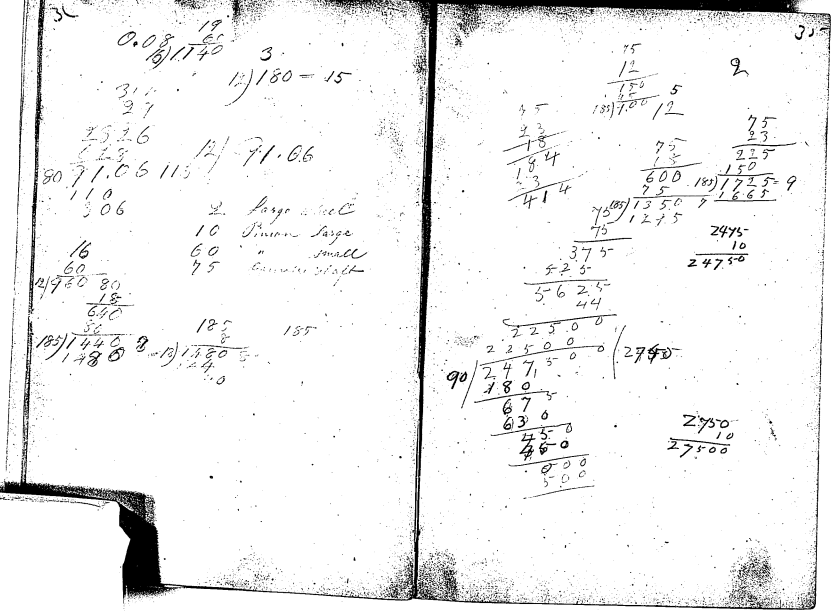
27

2500
55
12500
125
33 | 1375000

4583




30
31



75
75
375
525
5625
225000
225000
100 | 24775.0

2816
10

80
80
6400
44
2256 00
2256 00
100 | 2816
200
816
800
160
100
600
600

125
125
625
250
125
15625
625000
62500
6875.00

200 | 6875.00 (34.37
600
875
800
750.0
600
150.0
140
100

38

16.

1 3000
100
0

30

3000) 50000 (16
18000
3

270

39

83 Volt 100
114 200

120
120
120
240
120
145 20
44
5 8 0 8 0
5 8 0 8 0 0 (3194
63 8 8 8
600
3 8 8
200
188 8
180 0
8 8 0
8 0 0
100

115
115
575
115
115
13225
44
5 2 9 0 0
5 2 9 0 0 0 (2990
200) 5 8 1 9 9
400
1819
1800
1900
1800
100

115

16

2990
200
598000

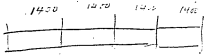
40

365
250
1825
3650
91.625
50
4:1807.50

41

25 5650
30
1695.0

1650.00

55. 

50 112
7. 33 ft. 32. 6. 930
250
279.00 9

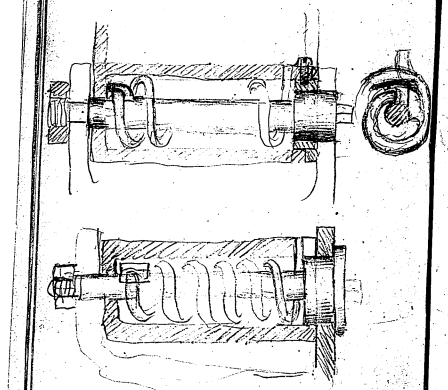
5. at 14 8
113 10/279.(27 27
7 30
210. 279
20
9. 279.
26.90.

27
10000
270,000
2

29 cents.
9½
54.00.

55.00
10.00
27. 42
15
27
42
9
10
90

42



3 inch Gore for rubber 55c per foot
" " " pipe 50c per foot

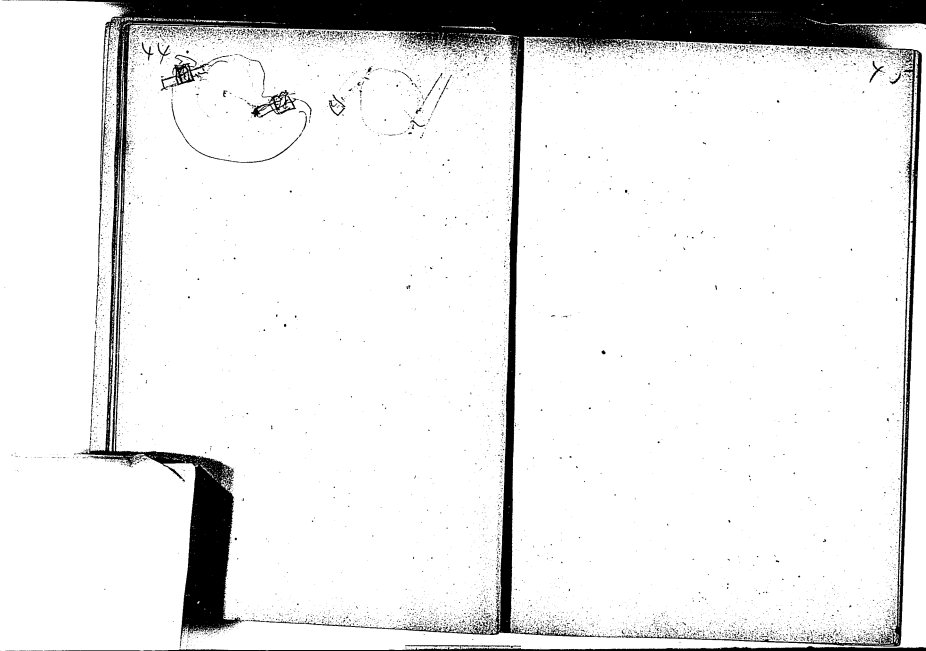
484 / 10 / 4840 — 18 / 350 / 19 — 19 — 95 — 38 — 475 — 105

1

2800

27

350



46

10

1964
24
7856
3928
47136

975
975
2075
2400
6475
75
32375
44975
481875 / 401.73 = 16.83
161
797
401.73 / 1706 / 10.1
1706 / 16.83
170.6 / 401.73 = 2
16.83
16.83
16.83 / 17060 / 1683 / 2300 / 1683 / 6170 / 5049 / 1121 / 1010 / 111

47

9 lbs to H

3

27 lbs per H.P.

1 gallon 10 lbs

2.7 Gallons per H.P. per hour

27 / 100 (3.7
81
190
189

18.5 H.P per hour

for 1 ct for H2O at

2 cts per 100 gals

272
60
152
772
304
1064
1064

33000 | 117,344 (3
99 000

7 | 12,000,000

117 | 344 | 120,000,000 | 102
117344
265600

102

12.1 lbs

64°7 feed water

110.000 ft lbs

12.1
121
1,331,000

9,247788
1331 000
10.578,788

990
772
1980
6930
6930
764,280
12.1

764 280
1528560
764 280
9247,680
46 000
6,3 7788

50

1178
772
2356
8246
8246
9094 16
1211
9094 16
1818832
909416
11,003,933.6

772

966
772
1932
5762
5762
635752
1211
635752
1271504
635752
769259 3 &

51

110,000 ft lbs to tons 1 lbs

112,000) 7,692,500 (
70 lbs of H_2O

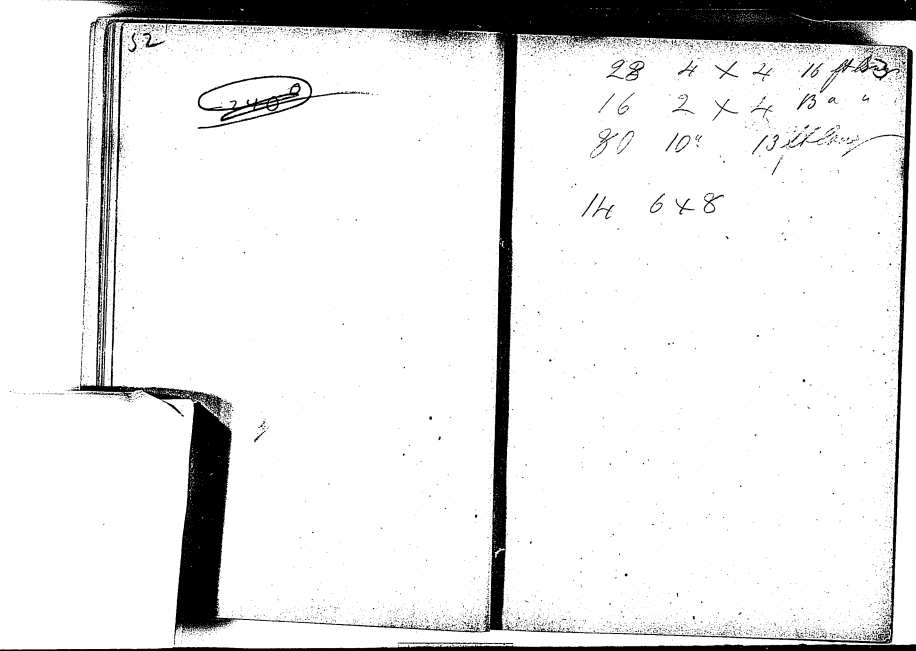
212
122.7
907

774
774
69,660

69) 110 (1.6
69
410

33,000
60
1,980,000

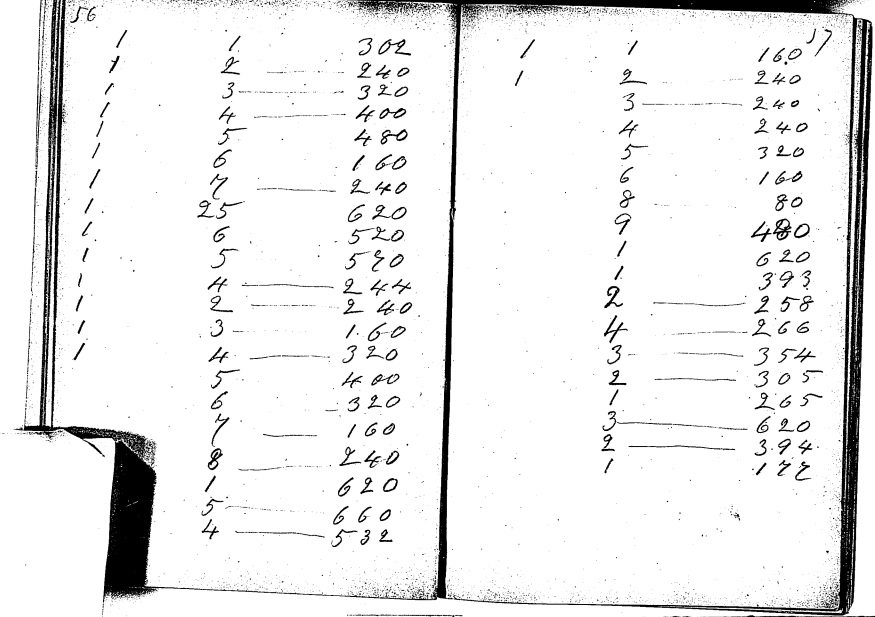
69,660) 11,980,000 (172.
139320
596800.


52
2400
28 4 x 4 16
16 2 x 4 Ba
80 10 13
14 6 x 8

Bores for Ground Conductors

~~Number of the Bore~~	Number of strands	feet
1	1	126
2	2	366
1	3	366
1	1	320
1	3	329
1	2	286
1	1	160
1	1	260
1	1	320
1	1	320
1	1	240
1	8	366
1	18	404
1	16	446
1	10	366
1	5	320
1	1	276
1	1	226
1	18	320
1	11	412
1	10	130

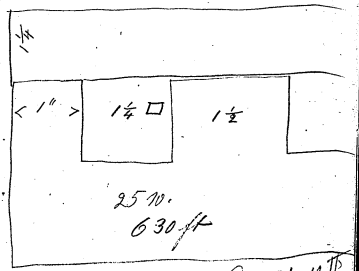
1	1	276
1	1	276
1	1	240
1	1	380
1	1	240
1	2	320
1	3	320
1	4	320
1	5	660
1	3	484
1	2	484
1	1	268
1	1	240
1	2	240
1	3	320
1	4	320
1	5	320
1	6	240
1	7	372
1	8	443
1	3	522
1	2	364



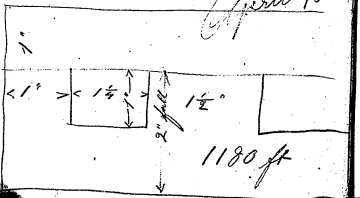
58

25 strands 630 ft

188,16 " 1180 "



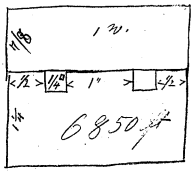
April 15th



59

1 strand ft

030 | 164,00 25
1 2 60
3 8 00

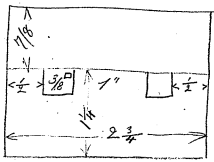


ft
126
320
160
260
320
320
240
276
276
276
276
240
380
240
484
268
302
620
160
620
393
265
11,7
6839 ft
11
6850 "

April 15th

60

2 Strands ft
3750



3 Strands 4085 ft.

Same as above

Total 7550 ft.

On hand 2000

Ad. Order 5850 ft

Apr. 13th

61

4 Strands 2642 ft

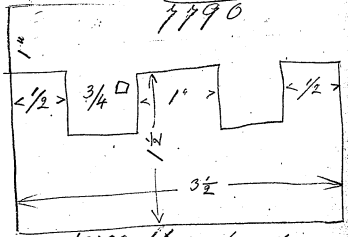
5 " 3230 "

6 " 1400 "

7772

28

7790



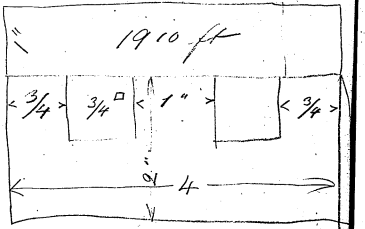
7000 ft on hand

ad. order 790 ft

April 13th

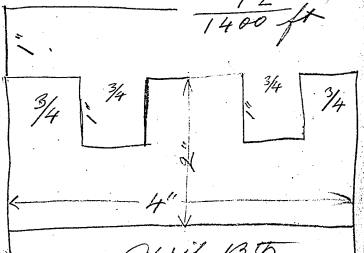
62

7 Strands 777 ft
8 " 1129
1906
4
1910



April 13th

9 Strands 480 ft 6"
10 " 496 "
11 " 412
1388
12
1400 ft



April 13th

64

C. of Largest $1600.00

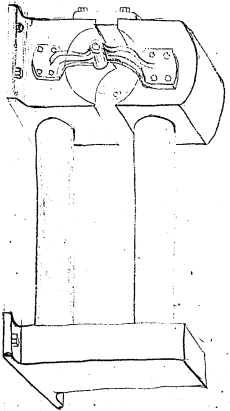
680
1180
1810) 1600.00 *
1448
1520

1800

Total No of Ft. C.

630
1180
6850
7850
7790
1900
1400
27600

Offen. 3.8.1960



March 26 1880.

TEE

5 Layers of No 12 wire 85
on each inch
Diameter .109. Area sq inch .925.
730 lbs of Bare

Cedar wire in 5 years 750 lbs
20340 ft.

106

Bepp	125.
Box	55
Case	70 - [illegible]
Trans.	1.00
Springs	10
Screws for box	3
6 Guides	
Arms	1.25.
Bridge	10
Drill-pin-Clutch R	90
Rubber tube	10
Cord	2.00
Keys	30
Coolwalking	40.
Stock	90
Screws	60
	958.

drop Cost 18c

365
300.
109,500,000

365
250
365
1825
18,615

107

Bepp	1.05
Box	55
Case	70
Trans	

280 400

365
250
365
1825
730
91,615
83230
[illegible]
201230
[illegible]
[illegible]

46-
3[illegible]
[illegible]56
65=
3[illegible]
[illegible]
2 50000000000
50.
58000
839 56000
500000
1.03,
450000000000

Trans

Obligations. 45.

2
2
5
3
5
3
8
8
5
5
3
2
5
8
5
5

64.

50.

Transmitter

Case castings.	8	cents.
Screw at button platinized	11	
Top screw button	11	
Boxwood.	4	
Platina.	45	
Connection & screws.	4	
diaphragm.	4	
screw & washer in diaphragm.	6	
Turning inside of Trans. & shell	20	
Drilling & Tapping	5	
Screws.	4	
Carbon button	10	
	133	
Expenses.	2	
	135.	

175

Received

Case. 60.

10 Bushings. 18

2 Connecting screws on edge. 2

Large Screws. 2

Diaphragm. (Drilled) Cut. — 2 ½

6 Screw for securing on disk, blued — 9

Square Connection pieces on Pipes — 1

Pin in big screws. —

Nut - screw head. - spring. washer,

Pattern, soldering. wire connection. 17 ½

Chalk Button

Brass Barrell. Endings 2

Washers. 4.

~~Screw for connection~~ 1

work in Barrell + plating -

drilling Tapping Turning + Surfacing 25

Pattern,

Bridge - 10

Stock. 5

Rod. with pin in it. 3

Tube, 5

Shaft. 1

worm 1 ½

Screw in bridge 1 ½

Screws in end worm Shaft. 2

Worm cutting. 2

Stock on shafts. 2

Rubber dauper 2

(To) piece to holding worm. 9

Worm (steel) 15

Handle + button Silver 16 ½

Arm - Castings 12

Washer 1 ½
" 1
Screw 2
pin + Pin 1 ½
Soldering
Nut -

Turning 5.
drilling 3
Tapping 1.
plating + 12
Taper reamer 1
Drilling 4

23.

Screws Brass + Mac',	3
Washers, hardened	1½
work on washers pins etc	4
Lamp Screw for arm, Plated,	1 3/4 -
Turning arm + bracket drilling, Milling,	20
Pin -	½ -
Drilling all holes, 19 plates	10 c
Bridges, Milling, drilling, Cap. assembling + getting worm movement working	25 -
Japanning,	6
Rubber tube,	4½
Assembling, payment	
3 Wood Screws,	10,
	$3.25.

325.

C.I.P.	2.00
Wood box + Base	- 55 -
Springs	5
two square brass connections	- 5 -
2 wood screws for fastening box	1
Cutting connections drilling	
Base - Sawing slots out box	15 -
6 Binding posts	36.
nuts	6.
12 washers,	2
2 Key buttons,	10.
2 Key buttons	6
2 Key button Screws	3.
platina points,	- 9
Key lever - Steele + drilling	6
Bridges drilling	
Soldering -	.6.
8 wood screws for keys	2
Connection cord	5 -
4 screws fasten telph	3
Running wires + assembling	25 -
	400

Packing for Exp 25 c

116

~~.060~~

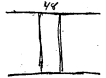
Ans. 16 wires .049

16) 1.00 (6.25
96
40
32
80

100
625
9375

.060) 9375 (156.3

15 wires
5
12) 75 Turns
6.25
2
124

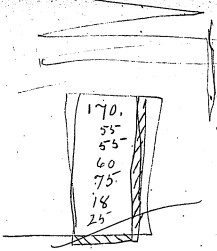


5 layers

232.5 feet an Ohm

3/16
5/16

117



3/8
5/8
5/16
3/16

1 inch
8/16
3/16
5/16

98.17
.0490
1.0207 inch

5/32 + 3/16 =
4/32 = 11/32

6.25
3.125
11
3125
31255
34375

625
5
3125

625
16
3750
625
10000

117

80.000 Ms
80
480000

40 64.000.000 Ms
90.000.000 Ms
15-4.000 Ms —
6
92.40.000

5 15.

15-4000
12
3.08000
15-4
22.

2.5 hp 25-hp.
12—
1 Press -2 asst
gang 4 men + foreman
#2 per day
Cost 15,000 Yds

2

Portland
3 19.20 Portland
Portland 40000 33
6 Returns,
3 Foremanship

40. Portland
Portland 56
Portland 365 Portland
300 Columbia Adams
875.00 Portland

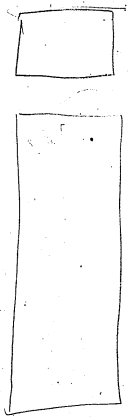
No 29 wire

42
46) 937.5 (20 4
92
175
184

20.4 turns

46) 312.5 (9 layers
20
9
180
2
2) 366
30 feet

170.5 feet



124

No. 20 wire

39) 937.5 (24.

78

157

39

180

39) 312.5 (8

312

21 times

8

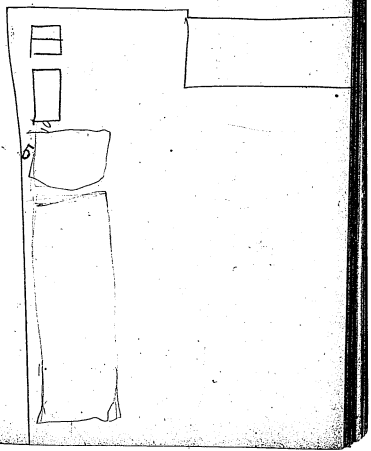
168

12) 336

28 feet

118.5

125



No. 21.

$$.036 \overline{)937.5} \quad 26$$
$$72$$
$$217$$
$$216$$

$$36 \overline{)3125} \quad 86$$
$$288$$
$$24$$

$$26$$
$$8$$
$$208$$
$$2$$
$$12 \overline{)416}$$
$$34$$

Porter Dynamo

To be wound with #12 B&S
= .109 Diameter

.109
1/4
120
4
480
20
.5

480
480
20
20
20
20
3
3
1046

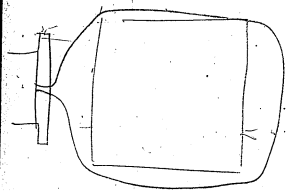
20.500
1046
19.454

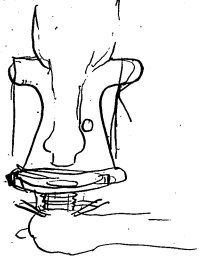
Iron	.020	.020
Wire	.480	.480
Binding	.020	.020
Insulation	.003	.003
	.523	.523
	523	
	1046	

2

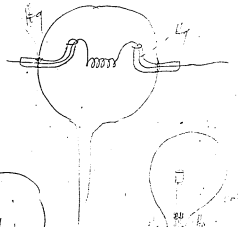
500
2

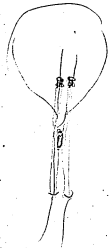
Large machine
To be wound with one
layer of No 19 BG
=.042 wire





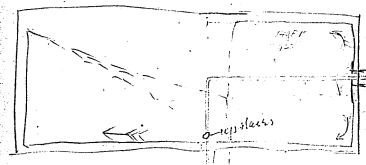
dung in ring

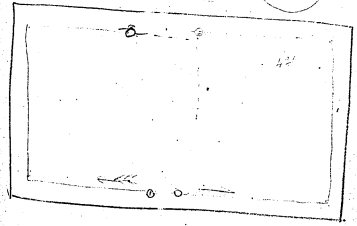




140

141
140

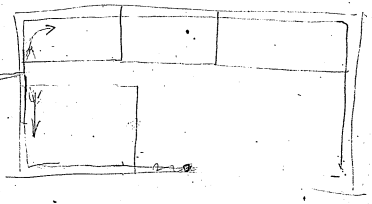


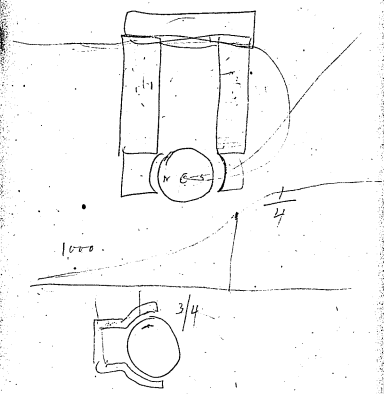


NL

45°
1
31.50

4.50 ft 1" pipe 31.50 NJ
.75 ft 3/4 " 3.27
34.77





5 1/2.

1

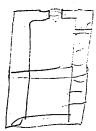
1/4
1/8

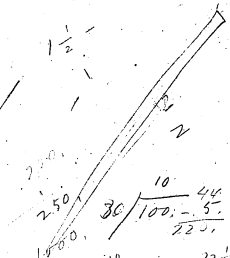
90.

3

110.

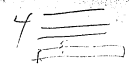
1000
20





50.
50.

1 cell, Press 1 Volt.
1 ohm;



10
10
100.
44
400
4400 | 440.

10 | 4400 | 820.
45 | 44
300.
220
200.
110.

12½ | 4400
352

10.

1.

1

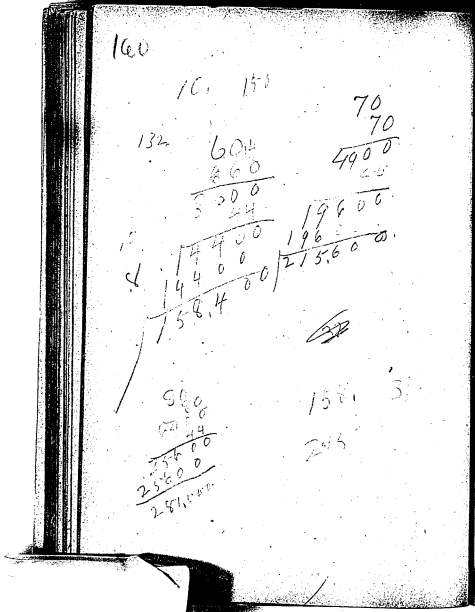
2
1 | 4 4
176

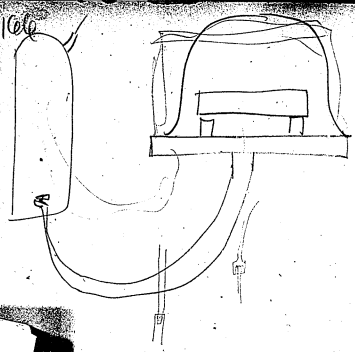
8

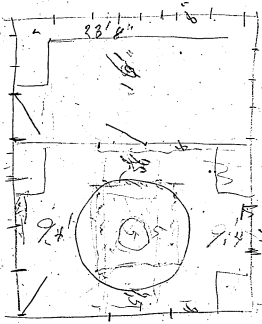
4
4
16
44
64
64
704

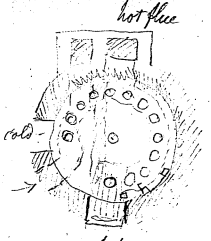
6
6
36
44
144
144
176 | 1584

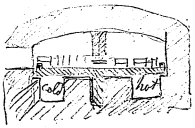
3.

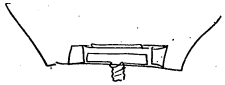





23'6"
9'
25
25'


hot plate
cold
hot


cold
hot



174.

Shafting cold rolled 175

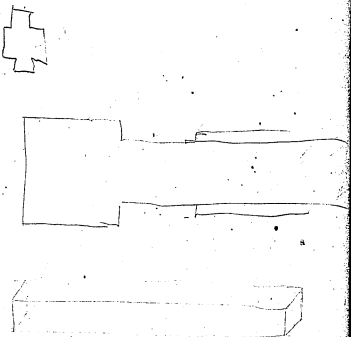
1 10 ft 3½" Diameter
1 26 " 3½" "
1 26 " 3" "

Coupling Collins Pat

1 3½" Duplex as sent
~~1 3~~ Geo Place Mt Cydney
Jan. 29th 1880.
JBK

176

Send for Porter or Indicator at Van Nostrand.



177

Hangers

2	3½"	30"	Drop
5	3½"	20	"
5	3"	20	"

Add for Distance of bolt holes by adding of them also width of Bases.

Pulleys & Length of Bases.

#1	60	Diam.	24	belt	3½ Face
#1	36	"	24	"	3½ "
10	32	"	5	"	3½ "
1	36	"	12	"	3½" "
1	36	"	12	"	3 " "
10	32	"	5	"	3 " "

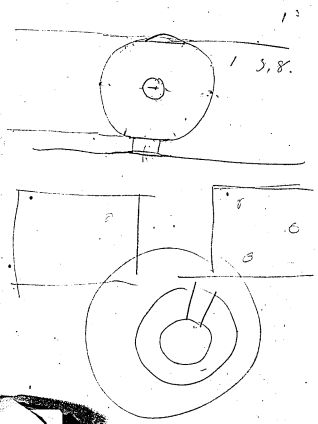
1 pair [illegible]

1 " " 3

Have sent for estimate 28 Oct 1880 Jas Harkness

178

Have washers & cable made



179

Bolts

5 1" 2ft 9" long
10 7/8" 1" 9" "
10 7/8" 1" 6" "
20 3/4" 1" 8" "

Ordered Jan 28th from [illegible] & Berry as 46 Part Card Page

Bolts for Bass Organ for Xmas Jan 31st 1879

Bolts for bearing brackets

6 1" bolts 7" long hexagon nuts & head
2 1/2" " 5½ " " "
6 3/4 screw bolts 6" long & nuts

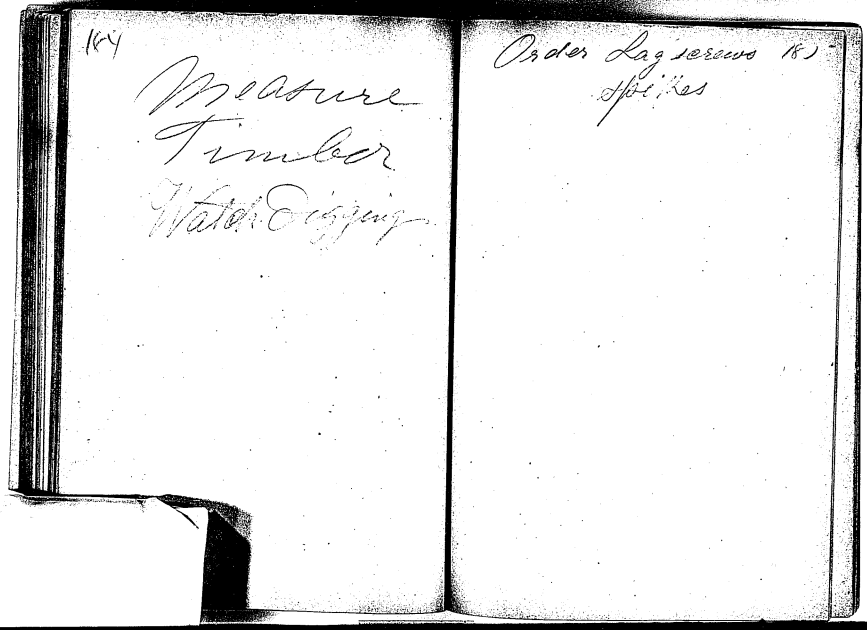
6 Windows 10 × 18 glass
wooden Sashes
2 Doors 3 ft × 6'10"
for Dym B.
Carr.
3 Doors 3 ft × 6'10"
9 Windows 10 × 18 glass

Bricks for Parlour 163

42000

42 Bbls of Cement

20 yds of Sand


184
Measure
Timber
Water Dripping
Order Lag screws 1/2
Spikes

186

Diam.=20" A=62.832

55

.040 4
040
020
020
02
2
22 0
22 0
2
2

.568

.2000
568

19.432

Order Iron Disks. 19½" Diam.
with 2¼ hole
65 Pieces 19½, 5¾ hole
ordered June 3rd at
Babcock & Wilcox

10 12" Joists 3" plank board
to paint

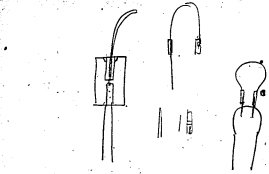
188

4 1/16" X 5 1/4"

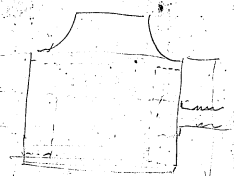
7 14

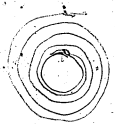
189

189

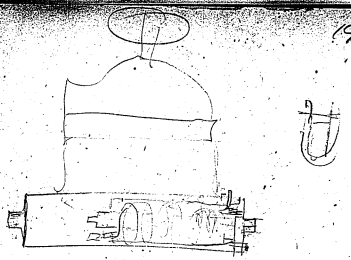


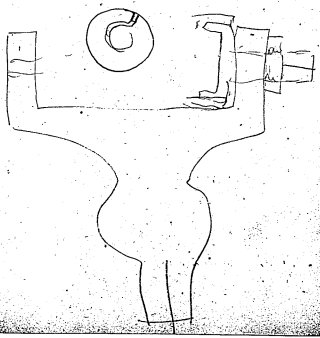
192





193





overall 10 ft piping in Hog 95
15 tubes thirty all exposed to air
1 in "
2 of them
fastened at Bottom

10

2611/5
13060

3134
31 34
130 00

V
V

12 33
5
8690

28150
25170
8690
33358
5740

V

Total - 28018

6 32" × 5 1/2" 1154 6924
1 36 × 24 6260
1 60 × 24 15164

1 p. 3 1/2 Co. 33870 777
1 " " 777
1 " 3 " 633

1 V
303.25 V

633

339
6
3534

5656 X 134
7542
131198

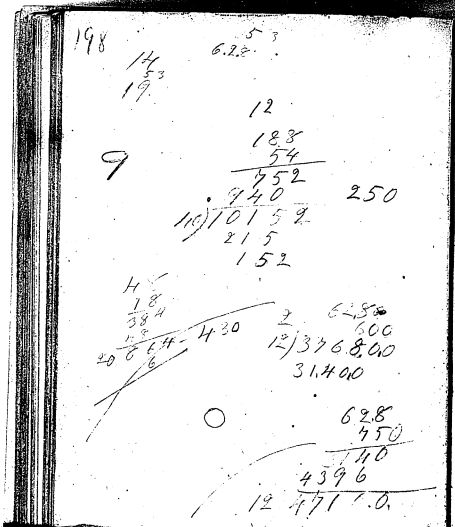
266.70

2 3 1/2" 30" hangers 6246
5 3 1/2 20" " +30.60
2 3 1/2 25 Stands
5 3" 20 hangers Total 33858

6 20" × 5" × 6 1/2 high 5334
1 20" × 24" × 3 1/2 " 2237
2 40" × 24" × 3 1/2 " 13198
1 54 × 24" × 3 1/2 " 12915
2 pair of 3 1/2" Iron Collars 1554
1 " " 3" " " 635
358.68

1 piece of shaft 3 1/2 7 ft long

33358
35868
69226
58345
11283



Hanger & Pulleys for 1.99
C.E. Tentative Building

1	3½"	30"	Drop Hangers
5	3½"	20"	" "
2	3½	25	Stands
5	3"	20	" "

Pulleys.

6	20" X 5" X 3½	high V.
1	20" X 24" X 3½	" V.
2	40" X 24" X 3½	"
1	54" X 24" X 3½	" V
1	48 X 9" X 3½	" V

Collars

2	pair	3½"
1	"	3"

12 6×7½×1½ 3239 lbs. @ 6½ 204.94

8 60 36 2306 " " 5¼ 121.07

P. 3085 48 1513 123.40

46 5605 1639.5

1529.5

Sprockets 45 lbs.

37½ L. 1⅛ thick × 9½ wide.

9½ □ ½ th.

764 lbs.

35 14.00

18

6 5/8 6" ℓ

3 1/2 24" 23

9 210 30 284 383 1.40

13

280 269

69

Wheat

Brass bars 45 lbs 22.50

" bearings 7 2.45

Mfg. Brass 3 □ 273 17.08

" " ○ 576

" " 30.26

" " B&S 33 2.97

Bolts 6 .90

" 1.00

Steel rims 30 4.87 24

End plates 3.60

Cast iron 440 4.40

" 65 17.60

Wood 30 □ 3.25

Cast iron 3.00

Copper wire Saige 40 23.12

" " small 20 2.80

" " 10.20

Mdse 4.00

M. S. B. S. 12 12.00

M. Bow. 14 14.00

Threading 20 20.00

3. & B. S. 10 7.00

2 4.055 10.00

Brass 19 5.10

Laundries Exp. etc 4.60

Labor 40.55

285.02

Material weight of Dop. wire for one Dare 65 lbs.

Feb 15th 1880

Material for one Far. motor

Brass Gare 45		22.50
" Bearings & Co		2.45
" Butts & Com. rings 19		5.10
Copper for Com. 10		4.00
" Wire large 140		52.00
" small 20		10.00
Wrought Iron.		
End plates		4.00
Iron for Brigs bolts & studs		2.97
Laminated Shells		2.14
Steel iron for spindles		.40
" " Armature		20.00
Iron of cores		30.26
" Yoak		17.08
Steel Shaft		3.60
Wood		3.00
Cast Iron 440 lbs a 4¢		17.60
" 65 " " 5¢		3.25
Sundries express freight cartage etc.		6.00
V Files.		2.10
L metal pour.	208 45	
	105 55	
	314.00	

206

30 lbs

166 3

36 | 6000
240
278
21

1413
188
1504
11304
1413
265644

145
18
1160
145
2610

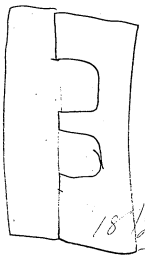
Belting

207

18	5"	15 ft long
1	12"	29 " "
1	24"	29 " "
1	24"	44 " "

10	5"	Single	14' 4" long
1	24"	Double	25 " "
1	24	"	44 " "
1	12	Single	21 " "

208



18 17 61 14½
18
81
1 90

Belts ordered from 209
P. Jewell & Sons March 6 to 1880

67 feet of 24" Double belt
and add for 2 laps for
Cement joints

20 ft 12 in wide and one lap
38 " 9 " " " "
261 " " " " 18 "

JHL

4 3"
2 3½

Pulleys ordered from 218
Wm Sellers & Co
March 6th 80
4 Pulleys 20" Diameter 5 face 3½ bore
10 " " " " 3" "
All high in centre
and for single belt
J.H.L.

March [illegible]

Bolts ordered from A. Bridges

100 5/8 inch lag screws 8" long
120 1/2 " " " 2 1/2 "
2 1 1/8 bolts 11 " "
4 1 1/8 " 19 " "
20 1" " 7 " "
200 5/8 round washers
6 1 1/8 " "
20 1" " "
6 1 1/8 washers 4" square
20 1" " " "

JC

24

March 18th 1880-1

Measure of belts

1	24 in	42½ ft without lap
1	" "	25 " "
1	9" Single	33 "
6	5" "	15 "
1	12" "	20 "

216

$1\frac{8}{12}$

2400

15 36 0 0

6
15
15
15

6345

20.42
240
4857 1680
4084
12 | 49 00.80
100
680

Mearch 1.9th

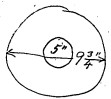
217

Wire ordered from A. Moore
1680 lbs of 1134 O. W.
40 Double covered 042 wire
over @ covering .051.

240
420

Mch. 20th Salmon & Chapin

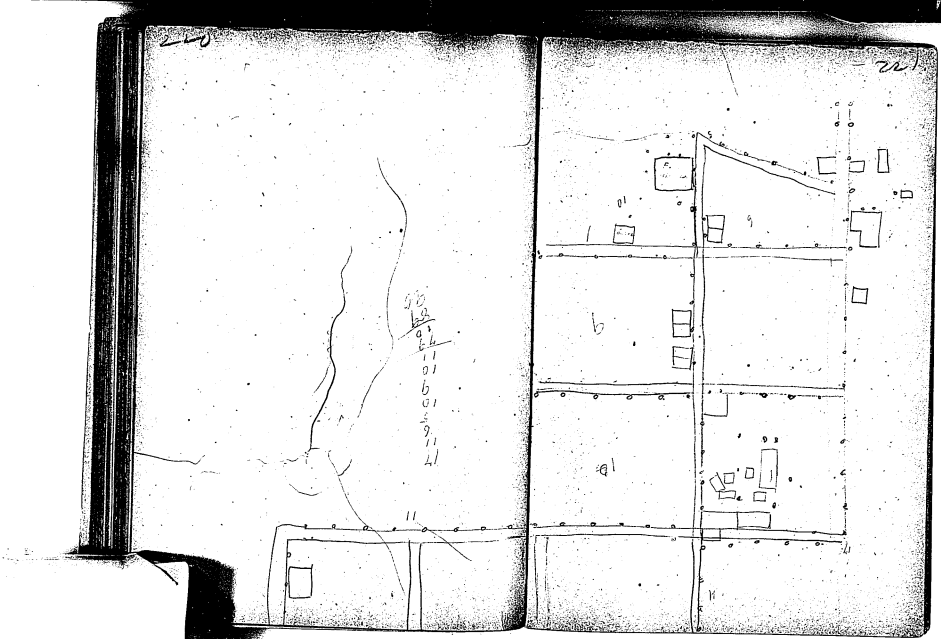
7050 circles .014 Ch. iron



2250 Note Delivered on
as before Mch 22d
The rest Apl. 5th

Benson & Williams

24 1/2 Disks 8 3/4" with a
1 7/8 hole March 20th



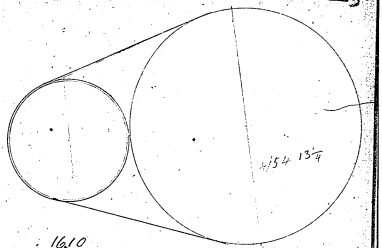
March 25th 1860. 225

Ordered of J. Butters

7000 ft large wire staples &
2000 " small

40.75
314
16300
4075
12225
12795 50 = 128.

10.6
14.1K



16.10

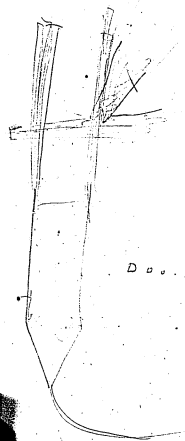
3 3/8
1 10/16
5 1/8

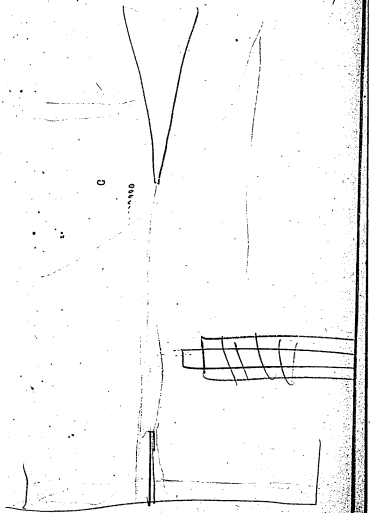
5.497
10.602
16.099

8049
2 9/16

8049
2625
10.674

14.122 8





228

10.25 = Dia of Bore
6
9.65 = " " Fibre

10.25 Di. B.
6
10.19 D. Fibre
.49
9.70 Di. iron

30
30
60 space
20 binding
20 "
20 top wire
220 insulation
3
3
5 46
4
5.50
6
486

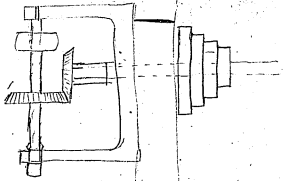
10.25
550
5 68 75

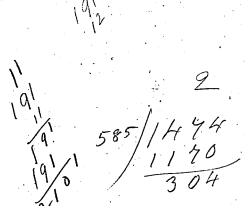
10.250
550
9.700

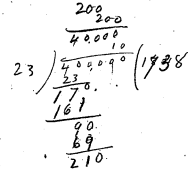
March 31st 80 225

Diameter of Bore 10.25
" " Fibre 10.19
" " Iron core 9.70

Length of wooden core 8.—
Distance between iron flanges 8.68
Length " " core 8.94







Copy of Order

1 pr. 3½ bore Collars

V4 Pulleys 20D. 5"f 3½ B.H.
V10 " 20 . 5" 3" "
4 " 10 4½ " SH.
6 " 10 5½ 1⅞ " H

1 4" Hanger 30" by 3½ bore
1 Counter
5 3½ " 20"
5 3 " 20
V6 20 X 5 Pulleys 3½ bore H
+1 20 X 24 " 3½ " " "
V8 54 X 24 " " " "
V1 48 X 9 " 3½ " "
V2 40 X 24 " " " "

Ordered March 26th

1 one 20 D. a Pulley 12" bett 3½ bore H
1 " 20 " " 12" " 3 inch " H

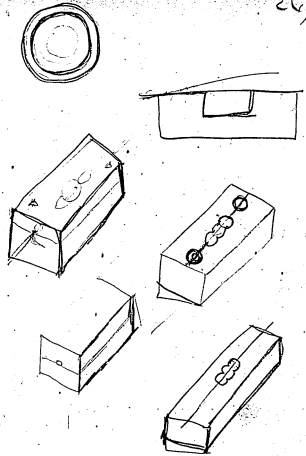
Has not ... up to March 27th

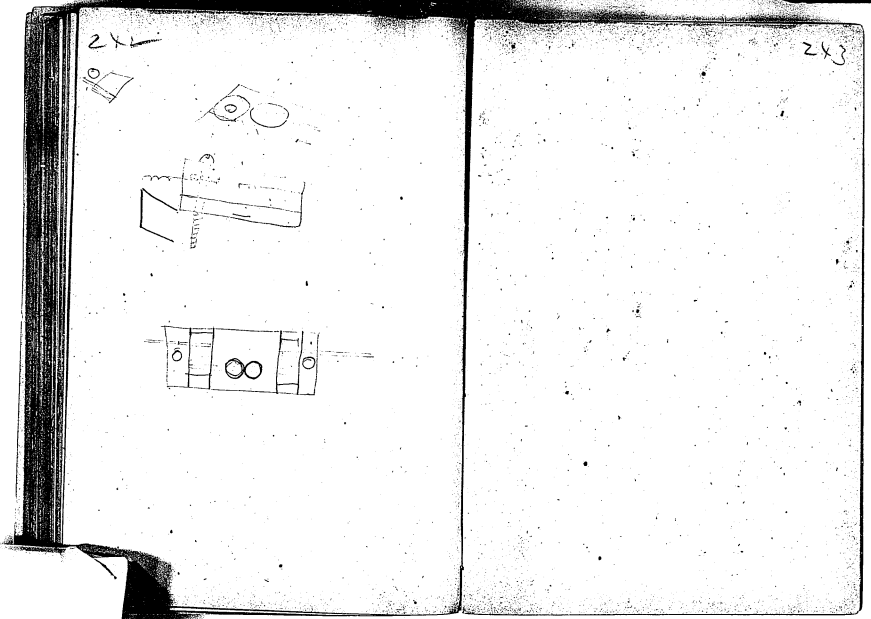
For one Armature
585 turns of .014 drum
and .001 of Linen paper
between each

March 26 1885
J.B.K.

Dimensions of Shaft
Brass Bushes &c. &c.

Diam. of To Commutr 1¼ of 9"
Commutr. " first line of 8" 1¾
first line to second " 7" —
1 24" Sects 41.1 9"
1 24 " 24. 7"
1 single 12" " 19. 8"




2x4
2x3

46. feet per Ohm

4" Diam

18"

.022
.013
.035

35) 18000 (
4. 2552
1. 5441
2.7111

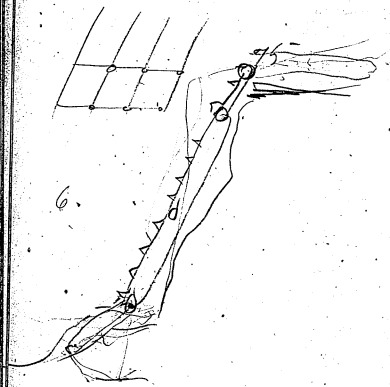
510 turns and feet

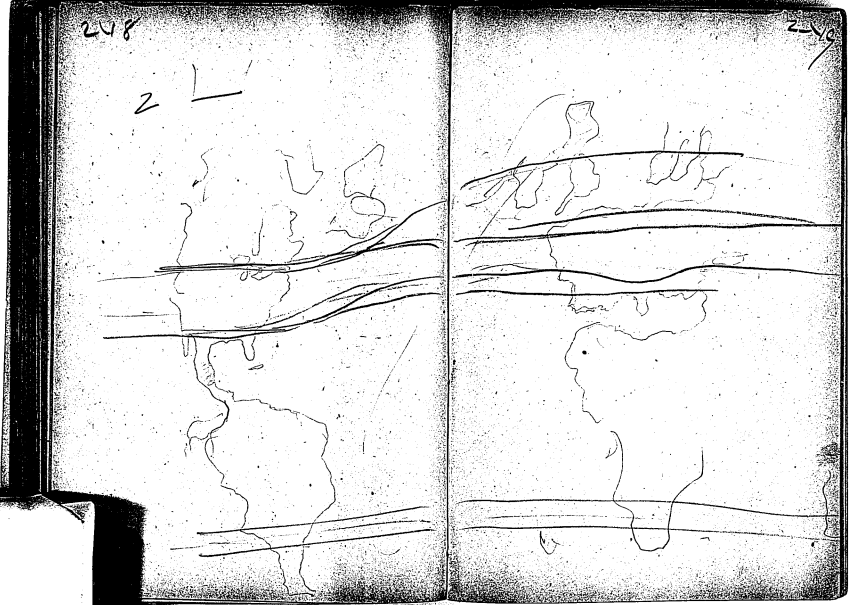
510 2.7111
46 1.6628
1.0483

11.2 Ohms for layer

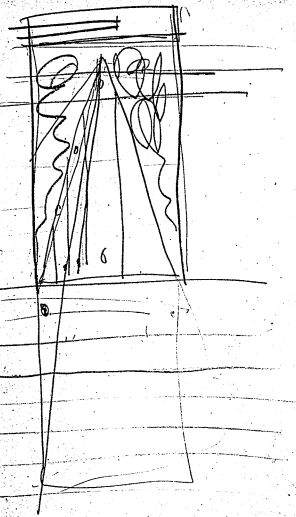
2
22.4
3
67.2

510
-1
3060


6.



Tordawayne



14½ lb of #35 wire = 5 layers on each break magnet = 20 ohms

5.5 ohms per layer of .022 wire

314
.035
1570
942
10990

.035 | 11.25 — 493 wires
140
325 | 493
315
100 493
11

12 | 5423 = 452
6 23
4.52 ft per layer

468 | 4520 | 9.6
4212
3080
2808

9.6
12
192
96
115.2

July 8th 1880 — 235

Magnets of Electric Break

are wound with 6 layers

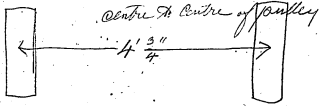
.022 wire = .53 ohms each.

256 30 ft of 1¼ cold rolled shafting for factory

5, / 1¼" Hangers 12" Drop

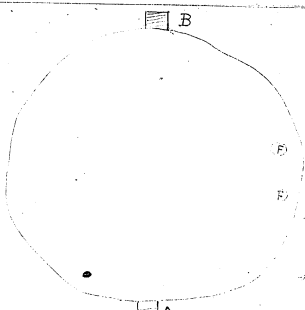
1 Coupling 1¼

1 Counter shaft measure length



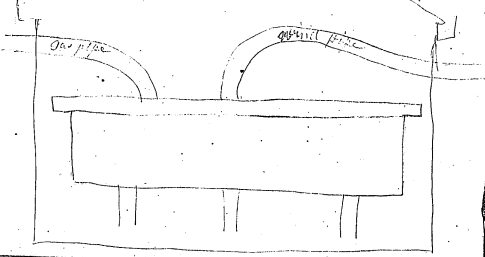
257

215



A Gas pipe
B Wind "
F Fillars

Top of float should be within 6 inches to bottom of wind pipe



216

284

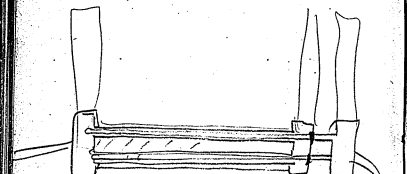
146.0 · 250/12 = 20.83 · 23.6 · 30.0 · 125 · 284 · 1.9 · 156 · 28 · 436

D to I Centre 3
I " II " 3
III " Pump " 2

D. 900 10" Pulley
I Ctr 250 36" "
I Centre II Pulley 12 "
II " I st " 30 "
II " II d " 12 "
Pump 24 "

Borough Estimate of cost of D.C. 265
eng. 1515

Poles. 4000 lin ft H.P.	#1.60.00
Bins. castings 1000	1.50
Magnets 4800	3.12
Copper wire 4300	160
Thin plates	4.50
Extra on Engine	3.50
Armatures & Brushholders with wire	2.00
Copper wire on Armature	6.0
Labor	2.00
	2042



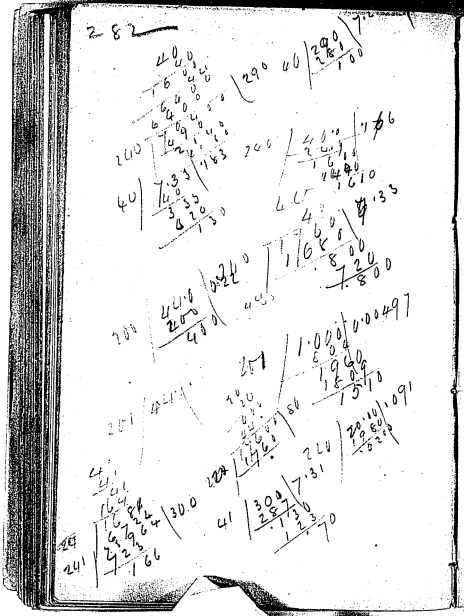
16, 7.

1 10,

7 8 9 10

1

70.



2 Johns
40 Yells on 200 Acres

$C = \frac{E}{R} = \frac{E}{A+R} = \frac{40}{40+200} = \frac{40}{240} = .166$

$R^2 \times 44 \div R = RA = 40 \times 44 \div 200 = \frac{290}{7.25}$

= ~~145~~ per Yell. 7.25

1 Yells

$\frac{1}{201} = .00497$

$1^2 + 44 \div 201 = .22$ Ac per Yell

1 Yell = .22 per Yell

10 — 4.
20 — 7.25 per
41 — 7.31 per Yell

20 Yells

$= \frac{20}{220} = .091$

$20 \times 20 \times 44 \div 220 = 80$

$\frac{41}{41+240} = 241$

73·1 per Yell

330.1064
48.54
1524